Amendment to the Water Quality Control Plan – Los Angeles Region to Incorporate the

Total Maximum Daily Load for PCBs, Pesticides and Sediment Toxicity in McGrath Lake

Adopted by the California Regional Water Quality Control Board, Los Angeles Region on [Insert Date]

Amendments:

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Add:

7-37 McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on [Insert date].

This TMDL was approved by:

The State Water Resources Control Board on [Insert date].

The Office of Administrative Law on [Insert date].

The U.S. Environmental Protection Agency on [Insert date].

This TMDL is effective on [Insert Date].

The elements of the TMDL are presented in Table 7-37.1 and the Implementation Plan in Table 7-37.2.

Table 7-37.1. McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL: Elements

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TMDL Element		Regulatory Provisio	<u> </u>		
Problem Statement	McGrath Lake was placed on the Clean Water Act Section 303(d) list in 1998, 2002, and 2006 as impaired for organochlorine pesticides (chlordane, dieldrin, DDT and derivatives) and polychlorinated biphenyls (PCBs) in sediment and for sediment toxicity. These toxic organic chemicals bind to soil particles, are stored in the fat tissue of exposed organisms, and create long term environmental impairments. Past studies concluded that found—sediment toxicity in McGrath Lake was likely due to the elevated concentrations of pesticides and PCBs in sediment.				
	objectives for Chemical Consciontained in Chapter 3, the nu	oplicable Water Quality Objectives for this TMDL are narrative water quality jectives for Chemical Constituents, Bioaccumulation, Pesticides and Toxicity ntained in Chapter 3, the numeric water quality objective for PCBs contained in napter 3 and the numeric water quality criteria promulgated in 40 CFR 131 alifornia Toxics Rule (CTR)).			
	PCBs in amounts exceeding beneficial uses of the lake, endangered species and estudies (contact and non-contact)	g the objectives a including aquatic parine, wildlife, and t recreation and com			
Numeric Targets	water quality criteria for protect column target for PCBs is bas of human health. These criteria for the protection of aquatic lift consumption beneficial uses. Effects Range-Low (ER-Ls) grand Atmospheric Administration	ter column targets for chlordane, DDT, and dieldrin are based on the CTR ter quality criteria for protection of human health (organisms only). The water umn target for PCBs is based on the water quality objective for the protection numan health. These criteria and this objective are more stringent than those the protection of aquatic life and thus will protect both aquatic life and fish assumption beneficial uses. The sediment numeric targets are derived from the ects Range-Low (ER-Ls) guidelines compiled by the National Oceanographic d'Atmospheric Administration (NOAA). The sediment toxicity impairment is dressed by these numeric targets, which are protective of aquatic life in diment.			
		Water Column	Sediment		
	Pollutant	Targets (μg/L)	Targets (ng/dry g)		
	Chlordane	0.00059	0.5		
	Dieldrin	0.00014	0.02		
	4,4'-DDT	0.00059	1		
	4,4'-DDE	0.00059	2.2		
	4,4'-DDD	0.00084	2		
	Total DDT		1.58		
	Total PCBs	0.00007	22.7		

TMDL Element	Regulatory Provisions	
Source Analysis	The majorA source of the pesticide and PCB loading is contaminated surf water and sediments flushing into McGrath Lake from the Central Ditch, who drains agriculture parcels and other lands in the subwatershed. All of contaminants included in this TMDL are legacy pollutants. While they are longer legally sold or used, they remain ubiquitous in the environment, bound fine-grained particles. Irrigation and rainfall in the watershed mobilize the particles, which are loaded to McGrath Lake. Surface water (stormwater agricultural drainage) accounts for almost half of the total recharge of the lawhile groundwater accounts for the rest of the recharge. Pesticides and PC have been detected in the surface water inlet to the lake (Central Ditch) but not the groundwater from local monitoring wells. There are no point sources pesticides or PCBs to McGrath Lake. Atmospheric deposition may be contributed.	
	In addition to external loading, the in-situ sediments are likely a source of contaminants to the lake water column due to the high concentrations of contaminants in the sediment.	
Linkage Analysis	A conceptual model identifies the assimilative capacity of McGrath Lake and links the source loading information to the numeric targets. The chemical properties of the pesticides and PCBs result in strong binding to particulate matter, therefore most of the incoming contaminants from the Central Ditch to the lake are bound to suspended solids. However, pesticide exceedances are observed in the Central Ditch even in low-flow conditions, indicating that some of the contaminants are transported to the lake in the water fraction. Therefore, there are water column and suspended sediment allocations for the Central Ditch.	
	Once the suspended sediment settles to the lake bottom, desorption is possible due to the high contaminant concentrations, favorable environmental conditions and extended contact time (between the sediment and water). The contaminated lake sediments are toxic to benthic organisms and may also be taken up through bioturbation and feeding processes. Therefore, both external loading sources from the lake subwatershed and internal loading from contaminated lake sediments are assigned load allocations.	

TMDL Element	Regulatory Provisions				
Load Allocations	Load allocations (LAs) addressing non-point sources of pesticides and PCBs are assigned to discharges from the Central Ditch to the lake and internal sources from the lake sediments. The lake sediments are defined as bed sediments in the main body of the lake and the riparian corridor west of Harbor Boulevard.				
	The in-lake LAs are for concentrations in sediment only.				
		Allocation - Responsible Pollutant for Concer in Lake Se		Load Allocation for Concentration in Lake Sediment (µg/dry kg)	
		State of C	alifornia - Dept.	Chlordane	0.5
			Recreation,	Dieldrin	0.02
		McGrath F	•	4,4'-DDT	1
		_	al Dischargers,	4,4'-DDE	2.2
		Other Sub	watershed	4,4'-DDD	2
		Landowne	rs	Total DDT	1.58
				Total PCBs	22.7
	Allocation - Pollutant Load Alloca		Water Column Load Allocation (μg/L)	Load Allocation for Concentration in Suspended Sediment	
	Pa	esponsible arties pricultural		(μg/L)	(μg/dry kg)
		schargers	Chlordane	0.00059	0.5
			Dieldrin	0.00014	0.02
			4,4'-DDT	0.00059	1
			4,4'-DDE	0.00059	2.2
			4,4'-DDD	0.00084	2
			Total DDT Total PCBs	0.00007	1.58
	Total PCBs 0.00007 22.7				22.1
Margin of Safety	The uncertainties associated with this TMDL are due to limited data on the amount and media by which PCBs and pesticides are entering the lake and the extent to which these contaminants are already in the lake. The seasonal and annual variability in the hydrologic budget also creates uncertainty. To address these uncertainties, an implicit margin of safety is applied. Conservative assumptions were used to calculate the loading to the lake and more the protective ER-L sediment quality guidelines were used for the sediment numeric targets.				
Seasonal Variations and Critical Conditions	As the contaminants of concern for this TMDL are transported to the lake by the mobilization of sediment, it is expected that the greatest influx of PCBs and pesticides occurs during periods of increased runoff from the watershed. Due to the artificial interference in the watershed hydrologic cycle due to agricultural				

TMDI Flomont	Pogulotory Provisions		
TMDL Element	Regulatory Provisions		
	activities, peak runoff may not correspond to the southern California wet season. Seasonal variations and critical conditions are addressed by the use of concentration-based load allocations. However, due to the bioaccumulative properties of the pollutants, effects occur over extended time periods, which minimizes the importance of seasonal variations.		
Monitoring	Monitoring Program		
	The monitoring program shall measure the progress of pollutant load reductions and improvements in water and sediment quality. The monitoring program shall:		
	 Determine attainment of numeric targets for PCBs and pesticides; Determine compliance with the load allocations for PCBs and pesticides; and Monitor the effect of implementation actions on lake water and sediment quality. 		
	The monitoring program shall consist of two phases. The first phase will focus on sampling the Central Ditch (for the first 10 years of the TMDL implementation schedule) and will be conducted by the responsible parties for the Central Ditch LAs. For the remaining portion of the TMDL implementation schedule, required water and sediment samples will be collected from the Central Ditch by "responsible parties" for the Central Ditch LAs, while required water and sediment samples will be collected from the lake as prescribed by the McGrath Lake Work Plan (MLWP) developed pursuant to a Memorandum of Agreement (MOA) entered into by and between "cooperative parties" and the Regional Board. The "responsible parties" and "cooperative parties" are defined in the implementation section below, and the lake and will be conducted by the responsible parties for the lake sediment LAs and the Central Ditch LAs.		
	Phase 1 requires the development of a monitoring and reporting plan (MRP) to comply with the TMDL requirements. The MRP shall propose a monitoring frequency for water and sediment sampling that will characterize the variability in water and sediment quality observed in the Central Ditch. Water samples will be analyzed for the following constituents:		
	 Total Organic Carbon Total Suspended Solids Total PCBs DDT and Derivatives Dieldrin Total Chlordane 		
	Sediment samples will be analyzed for the following constituents:		
	Total Organic CarbonTotal PCBsDDT and Derivatives		

TMDL Element	Regulatory Provisions
	DieldrinTotal Chlordane
	The annual monitoring reports will summarize proposed changes to the MRP based on the results of the previous year's monitoring. Sampling frequency may be reduced during future years once characterization of the variability in water and sediment quality has been achieved. In addition to the constituents above, general water chemistry (temperature, dissolved oxygen, pH and electrical conductivity) and a flow measurement will be required at each sampling event.
	Responsible parties for phase 1 monitoring shall submit a MRP plan to assess compliance with LAs and a Quality Assurance Project Plan (QAPP). The MRP and QAPP must be submitted to the Executive Officer for approval within six months of the effective date of the TMDL. The QAPP shall include protocols for sample collection, standard analytical procedures, and laboratory certification. All samples shall be collected in accordance with Surface Water Ambient Monitoring Program (SWAMP) protocols, where available or alternative protocols proposed by dischargers and approved by the Executive Officer. Monitoring shall begin 90 days after the Executive Officer has approved the MRP and QAPP.
	At the time of TMDL adoption, several of the constituents of concern had numeric targets lower than the laboratory detection limits. As analytical methods and detection limits continue to improve (i.e. development of lower detection limits) and become more environmentally relevant, responsible parties shall incorporate new analytical methods with lower detection limits in the MRP and the QAPP.
	A monitoring report shall be prepared and submitted to the Regional Board annually within three months after the completion of the final sampling event of the year.
	Phase 2 Phase 2 of the monitoring program shall commence following the remediation of the lake sediments to monitor the effect of implementation actions. The sampling, analysis and flow measurements begun in Phase 1 will continue. Additionally, samples will be collected from within the lake. Water column and surficial sediment (top 2 cm) samples will be collected at the northern end of the lake and from the deepest portion of the lake. All samples will be collected in accordance with SWAMP protocols. Cooperative parties shall only commence, participate or fund the Phase 2 monitoring as provided in the MLWP.
·	Water samples will be analyzed for the following constituents:
	 Total Organic Carbon Total Suspended Solids Total PCBs DDT and Derivatives Dieldrin Total Chlordane

TMDL Element	Regulatory Provisions
TMDL Element	Sediment samples will be analyzed for the following constituents: Total Organic Carbon Total PCBs DDT and Derivatives Dieldrin Total Chlordane Toxicity (if toxicity is determined, a TIE shall be completed to elucidate the cause of the toxicity) Samples from the lake will be collected annually. The annual reports required for Phase 1 will continue during Phase 2. Additional monitoring may be required depending on which implementation option is chosen. Three years from the effective date of the TMDL, responsible cooperative parties must submit the McGrath Lake Work Plan (MLWP) as discussed in the implementation section below. The MLWP shall include any additional monitoring needed to assess the effectiveness of the chosen implementation option. The MLWP shall include a MRP and QAPP for the Phase 2 monitoring. At the time of TMDL adoption, several of the constituents of concern had numeric targets lower than the laboratory detection limits. As analytical methods and detection limits continue to improve (i.e. development of lower detection limits) and become more environmentally relevant, responsible parties shall incorporate new analytical methods with lower detection limits in the MRP and the QAPP. All required monitoring under Phase 1 and Phase 2 shall incorporate new analytical methods, once commercially available with lower detection limits, in the MRP and the QAPP. A monitoring report shall be prepared and submitted to the Regional Board
	A monitoring report shall be prepared and submitted to the Regional Board annually within three months after the completion of the final sampling event of the year.

TMDL Element	Regulatory Provisions
Implementation Plan	Compliance with this TMDL will require the elimination of toxic pollutant loads in toxic amounts from the Central Ditch subwatershed to the lake and identification and implementation of strategies lake management activities to remediate the contaminated sediments at the bottom of the lake. Table 7-37.2 contains a schedule for cooperative responsible parties to implement a MOA to jointly develop the MLWP and BMPs to achieve the TMDLto implement strategies to remediate the contaminated lake sediments and achieve lake sediment load allocations.
	I. Implementation and Determination of Compliance with the Central Ditch LAs for Agricultural Non-point Source Discharges
	The Central Ditch load allocations assigned to agriculture non-point source dischargers will be implemented through the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands (Conditional Waiver) or other appropriate Regional Board Orders. The load allocations for the Central Ditch shall be incorporated into the Conditional Waiver or other appropriate Regional Board Orders.
	It is likely that a combination of implementation measures will be needed to achieve the LAs. The Central Ditch implementation actions may include, but are not limited to the following:
	 On-Farm BMPs Regional Sub-Watershed BMPs Regional Treatment System Redirect Agriculture Discharge
	Agricultural Dischargers will be considered in compliance with the TMDL LAs if they comply with all provisions of the Conditional Waiver established to implement the LAs, or those of any alternative regulatory order, if any, that may be established to implement the LAs in lieu of the Conditional Waiver.
	II. Implementation of Memorandum of Agreement to Develop McGrath Lake Work Plan and Determination of Compliance with LAs for Contaminated Lake Sediments
	The contaminated lake sediment LAs may be implemented through a memorandum of agreement (MOA), which the Executive Officer is authorized to negotiate and execute, provided it is consistent with the following: The MOA shall detail the voluntary efforts that will be undertaken to attain the load allocations. The MOA shall comply with the Water Quality Control Policy for Addressing Impaired Waters: Regulatory Structure and Options ("Policy"), including part II, section 2 (c)(ii) and related provisions, and shall be consistent with the requirements of this TMDL. If the MOA is timely adopted in accordance with the implementation schedule below, the program described in the MOA shall be deemed "certified", pursuant to the Policy, subject to the conditions of Policy section 2 (e). The MOA shall include development of the MLWP, which must be approved by the Executive Officer, and may be amended with Executive Officer

TMDL Element	Regulatory Provisions
	approval, as necessary. If a MOA is not established with responsible parties within two years of the effective date of the TMDL or if responsible parties do not comply with the terms of the MOA, or if the MOA and MLWP are not implemented or otherwise do not result in attainment of load allocations consistent with the provisions and schedule of the TMDL, a cleanup and abatement order pursuant to Cal. Water Code section 13304, or another appropriate regulatory order, shall be issued to implement the load allocations. Implementation of the MOA shall be reviewed annually by the Executive Officer as part of the MRP annual reports.
	The purpose of the MOA is not to create evidence of responsibility or ascertain legal liability for subsequent remediation of the lake sediments, but rather to organize stakeholders who have an interest in the remediation of the lake sediments.
	To be a valid non-regulatory implementation program adopted by the Regional Board, the MOA shall include the following requirements and conditions:
	The MOA shall direct development of a MLWP that addresses the impaired waterbody as approved by the Executive Officer.
	The MOA shall outline the roles and responsibilities of the Regional Board and each cooperative responsible party.
	■ The MOA shall contain conditions that require trackable progress on attaining load allocations and numeric targets. A timeline shall be included that identifies the point(s) at which Regional Board regulatory intervention and oversight will be triggered if the pace of work lags or fails.
	The MOA shall contain a provision that it shall be revoked based upon findings that the program has not been adequately implemented, is not achieving its goals, or is no longer adequate to restore water quality.
	■ The MOA shall be consistent with the <u>California Policy for Implementation</u> and <u>Enforcement of the Non-point Source Pollution Control Program</u> , including but not limited to, the "Key Elements of a Non-point Source Pollution Control Implementation Program".
	Pursuant to the terms of the MOA, the cooperative parties and the Regional Board will work jointly to develop the MLWP and remediate the lake sediments. The purpose of the MLWP is to set forth strategies to achieve lake sediment load allocations in a manner that is beneficial to subwatershed landowners and the public in general. To the satisfaction of the Executive Officer, the MLWP shall meet the following criteria:
	■ Three years from the effective date of the TMDL responsible cooperative parties shall submit a MLWP for approval by the Executive Officer.
	The MLWP shall include identification of implementation measures that will achieve lake sediment LAs.

TMDL Element	Regulatory Provisions			
	■ The MLWP shall include any additional monitoring needed to assess the effectiveness of the MLWP's chosen implementation strategies.			
I	The MLWP shall include a MRP and QAPP for phase 2 monitoring described above.			
	The MLWP shall include a strategy to secure funds necessary to remediate the lake sediments and achieve lake sediment allocations.			
	■ The MLWP shall include tasks and a clear timeline for task completion leading to attainment of lake sediment LAs. The roles and responsibilities of each responsible cooperative party shall also be outlined in the MLWP.			
	■ The MLWP shall consider and address the potential impacts of lake sediment remediation strategies on include a description of how remediation of McGrath Lake sediments will complement other restoration efforts currently ongoing at McGrath State Beach and the implementation of the McGrath Beach Bacteria TMDL and ongoing restoration efforts at McGrath State Beach.			
	■ The MLWP shall achieve compliance with the load allocations through the implementation of lake management strategies to reduce and manage internal pesticide and PCBs sources from lake bed sediments. The lake management implementation actions may include, but are not limited to the following:			
	 Sediment Capping: Dredging/Hydraulic Dredging; Monitored Natural Attenuation: or Other appropriate means of implementation. 			
	The Executive Officer may require a revised MLWP to reflect the results of data obtained through TMDL implementation.			
	III. APPLICATION OF ALLOCATIONS TO RESPONSIBLE PARTIES			
	A. Responsible parties for the Central Ditch LAs are the agricultural dischargers in the McGrath Lake sub-watershed.			
	B. Responsible parties for the in-lake sediment LAs are:have not yet been identified. Instead, cooperative parties for the lake sediment LAs are identified, not as responsible parties or as dischargers, but as landowners in the subwatershed who may execute a MOA jointly with the Regional Board for the development of the MLWP so that lake sediment allocations can be achieved in a manner that is in the best interest of both the subwatershed landowners and the public in general.			

TMDL Element	Regulatory Provisions
	 Cooperative parties for the lake sediment LAs include: State of California Department of Parks and Recreation McGrath Family (owners of the Central Ditch west of Harbor Blvd and the northern end of the lake) Agricultural Dischargers Landowners in the McGrath Lake sub-watershed Ventura County Regional Sanitation District (Bailard Landfill)
	If a MOA is not established by and between cooperative parties and the Regional Board within two years of the effective date of the TMDL, or the cooperative parties do not comply with the terms of the MOA, or if the MOA and MLWP are not implemented or otherwise do not result in attainment of load allocations consistent with the provisions and schedule of the TMDL, the Executive Officer shall initiate an investigation, with input from current landowners, to (1) identify the responsible parties, whether named in this TMDL or not, whose discharges of the legacy pollutants have caused or contributed to the impairment of the lake; (2) ascertain the whereabouts and capacities of those responsible parties and/or their successors; (3) determine the parties to whom responsibility for remediation of sediments should be assigned; and (4) issue appropriate regulatory orders to those responsible parties. If the Executive Officer is unable to identify the responsible parties per the investigations above, then the TMDL shall be reconsidered.

Table 7-37.2 McGrath Lake PCBs and Pesticides TMDL: Implementation Schedule

Task	Task	Responsible Party	Deadline
Number			
4	TMDL Load Allocations (LAs) for Chlordane, Dieldrin, 4,4'-DDT, 4,4'-DDD, Total DDT, and Total PCBs apply.	State of California Dept. of Parks and Recreation, McGrath Family (owners of the Central Ditch west of Harbor Blvd and the northern end of the lake), Agriculture Dischargers, Other sub-watershed landowners	Effective Date of TMDL
<u>21</u>	Responsible parties assigned Central Ditch LAs shall submit a Monitoring and Reporting Plan (MRP) to the Executive Officer for review and approval to address Phase 1 monitoring.	Agriculture Dischargers	6 months from the effective date of the TMDL
<u>32</u>	Responsible parties assigned Central Ditch LAs shall begin monitoring as outlined in the approved MRP.	Agriculture Dischargers	90 days from the date of MRP approval
43	Responsible parties assigned Central Ditch LAs shall submit annual monitoring reports. Reports shall be submitted within three months after the completion of the final sampling event of the year.	Agriculture Dischargers	Annually
5 <u>4</u>	Responsible Cooperative parties shall enter into a Memorandum of Agreement (MOA) with the Regional Board to implement the lake sediment LAs.	State of California Dept. of Parks and Recreation, McGrath Family, Agriculture Dischargers, Other sub-watershed landowners	Two years from the effective date of the TMDL
<u>65</u>	Responsible pParties subject to the MOA shall submit a McGrath Lake Work Plan (MLWP) for review and approval by the Executive Officer.	State of California Dept. of Parks and Recreation, McGrath Family, Agriculture Dischargers, Other sub-watershed landowners	Three years from the effective date of the TMDL
7 <u>6</u>	Responsible pParties subject to the MOA shall submit annual progress reports.	State of California Dept. of Parks and Recreation, McGrath	Annually from the date of MLWP

Task	Task	Responsible Party	Deadline
Number			
		Family, Agriculture Dischargers, Other sub-watershed landowners	approval
<u>87</u>	Responsible parties shall attain Central Ditch LAs.	Agriculture Dischargers	10 years from the effective date of the TMDL
<u>98</u>	Responsible parties shall bBegin implementation of McGrath Lake sediment remediation actions as outlined in the based on MLWP.	State of California Dept. of Parks and Recreation, McGrath Family, Agriculture Dischargers, Other sub-watershed landowners	As soon as possible, but no later than 10 years from the effective date of the TMDL
10 9	Responsible parties shall begin Phase 2 monitoring shall begin as outlined in the MLWP. The results shall be included as part of the annual progress reports initiated in Task 86.	State of California Dept. of Parks and Recreation, McGrath Family, Agriculture Dischargers, Other sub-watershed landowners	13 years from the effective date of the TMDL or at the time lake sediment remediation actions are completed, whichever is earlier. To be determined based on MLWP.
11 10	Responsible parties shall achieve ILake sediment LAs shall be achieved.	State of California Dept. of Parks and Recreation, McGrath Family, Agriculture Dischargers, Other sub-watershed landowners	14 years from the effective date of the TMDL